What is claimed is:

1. A method for generating ions in a gas within a module including a pair of electrodes spaced apart across a gap, the method comprising the steps for:

applying alternating ionizing voltage to the electrodes for generating positive and negative ions within the gap between electrodes; and

selecting the frequency of alternating ionizing voltage to establish the positive and negative ions substantially centrally within the gap.

2. The method according to claim 1 comprising:

selecting the amplitude of the ionizing voltage in consideration of mobility of the generated ions to establish the frequency of the ionizing voltage as:

$$\mu * V(t) / G^2$$

where μ is the ion mobility, V (t)) is the amplitude of the ionizing voltage, and G is the dimension of the gap between electrodes.

3. The method according to claim 1 comprising:

selecting the frequency of the ionizing voltage to establish residence time of the generated ions within the gap substantially as:

$$f = \tfrac{1}{2} T,$$

where f is frequency, and T is ion residence time.

4. The method according to claim 1 comprising:

selectively moving the generated ions from within the gap.

5. The method according to claim 4 comprising:

introducing flowing gas through the gap to transport generated ions from within the gap in the flowing gas.

6. The method according to claim 4 comprising:

moving the generated ions from within the gap in response to an electrostatic field of a charged object disposed in proximity to the gap.

7. The method according to claim 1 in which the alternating ionizing voltage is capacitively coupled to at least one of the pair of electrodes for self-balancing the generation of positive and negative ions within the gap.

8. The method according to claim 5 comprising passing the gas through the gap in substantially unimpeded flow.

9. The method according to claim 5 in which the gap is aerodynamically configured to pass the flowing gas therethrough substantially unimpeded.

10. Apparatus for generating a supply of positive and negative ions in a gas, the apparatus comprising:

a module including a pair of electrodes spaced apart across a gap of selected dimension;

a source of alternating ionizing voltage coupled to the pair of electrodes for supplying time-varying voltage of alternating polarities thereto at a selected frequency for generating positive and negative ions substantially concentrated centrally within the gap.

11. Apparatus according to claim 10 in which the frequency is selected as:

$$\mu * V(t) / G^2,$$

where μ is the ion mobility in the gas, V(t)) is the amplitude of the time-varying ionizing voltage, and G is the dimension of the gap.

12. Apparatus according to claim 10 in which the source supplies alternating ionizing voltage at a frequency to establish residence time of generated ions within the gap substantially as:

$$f = \tfrac{1}{2} T,$$

where f is frequency, and T is residence time.

13. Apparatus according to claim 10 comprising:

a source of flowing gas for transporting generated ions from within the gap.

14. Apparatus according to claim 13 in which the flowing gas is air; and including a fan disposed relative to the gap for transporting generated ions from within the gap in a flowing stream of air.

15. Apparatus according to claim 10 in which the gap is disposed in proximity to a charged object for moving generated ions from within the gap in response to an electrostatic field of the charged object.

16. Apparatus according to claim 10 including capacitive coupling between the source of alternating ionizing voltage and at least one of the pair of electrodes for supplying time-varying voltage of alternating polarities to the electrodes for self-balancing the generation of positive and negative ions within the gap.

17. Apparatus according to claim 10 in which the gap is aerodynamically configured for passing flowing gas therethrough substantially unimpeded.

18. Apparatus for generating positive and negative ions comprising:

electrode means for forming a gap;

source means coupled to the electrode means for supplying thereto alternating ionizing voltage at a selected frequency for which generated ions are maintained substantially centrally within the gap.

19. Apparatus according to claim 18 in which the frequency is selected as:

$$\mu * V(t) / G^2,$$

where μ is ion mobility, V(t)) is the ionizing voltage, and G is the dimension of the gap.

20. Apparatus according to claim 18 in which the source means is capacitively coupled to the electrode means.

21. Apparatus according to claim 18 in which generated ions are selectively transported from within the gap.

22. Apparatus according to claim 21 in which the generated ions are transported in response to an electrostatic field disposed in proximity to the gap.

23. Apparatus according to claim 21 including means for flowing gas through the gap for transporting generated ions from within the gap in the flowing gas.